

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

1. (Currently Amended) A plastisol formulation, comprising:

a) a plasticizer or mixture of plasticizers; and

b) a mixture of polymer particles comprising at least two components A and B;

c) at least one member selected from the group consisting of fillers, coupling agents, stabilizers, desiccants, rheological additives, hollow bodies and mixtures thereof;

wherein said polymer particles comprising at least two components A and B have one of the following structures

ba) a 2-stage structure, a 3-stage structure or multi-stage structure, or

bb) a gradient polymer structure;

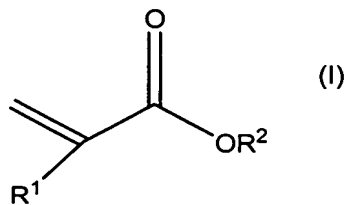
wherein said component A comprises a polymer particle obtained by emulsion polymerization, said polymer particle having a core KA, an outermost shell S₁A, a second shell S₂A and a third shell S₃A;

wherein said component B comprises a polymer particle comprising a core KB, an outermost shell S₁B, a second shell S₂B and a third shell S₃B;

wherein said core KA comprises the following monomers in copolymerized form:

K A a) 10 to 50 percent by mass, relative to the core, of (meth)acrylates of

Formula I



wherein

$R^1 = H$ or CH_3 ; and

$R^2 = CH_3$ or CH_2CH_3 ;

K A b) 50 to 90 percent by mass, relative to the core, of compounds of Formula I;

wherein $R^1 = H$ or CH_3 , and R^2 is selected from the group consisting of propyl, isopropyl, tert-butyl, n-butyl, isobutyl, pentyl, hexyl, iso-octyl, octyl, cyclohexyl, 2-ethylhexyl, octadecyl, dodecyl, tetradecyl, oleyl, decyl, benzyl, cetyl, isobornyl, neopentyl, cyclopentyl, undecyl, and docosyl;

K A c) 0 to 10 percent by mass, relative to the core, of compounds that can be copolymerized with the monomers K A a) and/or K A b); and

K A d) 0.1 to 9.9 percent by mass of monomers containing an epoxy group; wherein said outermost shell S_1 A comprises the following monomers in copolymerized form:

S_1 A a) 70 to 100 percent by mass of monomers of Formula I,

wherein

$R^1 = H$ or CH_3 , and

$R^2 = CH_3$ or CH_2CH_3 ;

S_1 A b) 0 to 30 percent by mass of the monomer of Formula I, wherein the R^1 and R^2 have the meaning indicated for K A b); and

S_1 A c) 0 to 10 percent by mass of a monomer copolymerized with S_1 A a) and S_1 A b);

wherein said second shell S_2 A comprises of the following monomers in copolymerized form:

S_2 A a) 20 to 80 percent by mass of monomers of Formula I, wherein

$R^1 = \text{H or } \text{CH}_3$, and

$R^2 = \text{CH}_3 \text{ or } \text{CH}_2\text{CH}_3$;

S_2 A b) 20 to 70 percent by mass of the monomer of Formula I, wherein

$R^1 = \text{H or } \text{CH}_3$, and

R^2 has the same meanings as for K A b); and

S_2 A c) 0.1 to 9.9 percent by mass of monomers containing an epoxy group;

wherein said third shell S_3 A comprises the following monomers in copolymerized form:

S_3 A a) 30 to 100 percent by mass of monomers of Formula I, wherein:

$R^1 = \text{H or } \text{CH}_3$, and

$R^2 = \text{CH}_3 \text{ or } \text{CH}_2\text{CH}_3$;

S_3 A b) 0 to 70 percent by mass of the monomer of Formula I, wherein:

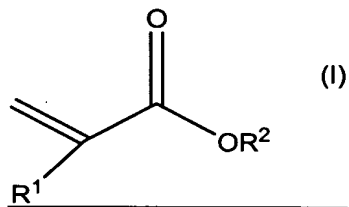
$R^1 = \text{H or } \text{CH}_3$, and R^2 has the same meanings as for K A b); and

S_3 A c) 0 to 10 percent by mass of a monomer that can be copolymerized with S_1 A) to

S_1 A), the monomers having the meanings indicated for K A c);

wherein said core KB comprises the following monomers in copolymerized form:

K B a) 10 to 50 percent by mass, relative to the core, of (meth)acrylates Formula I



wherein

$R^1 = \text{H or } \text{CH}_3$; and

$R^2 = \text{CH}_3 \text{ or } \text{CH}_2\text{CH}_3$;

K B b) 50 to 90 percent by mass, relative to the core, of compounds of Formula I, wherein R^1 and R^2 have the meanings indicated for K A b);

K B c) 0 to 10 percent by mass, relative to the core, of compounds copolymerizable with the monomers KB a) and/or KB b); and

K B d) 0.1 to 9.9 percent by mass of monomers that contain nucleophilic groups,

S₁ B a) 70 to 100 percent by mass of monomers of Formula I, wherein:

R^1 = H or CH₃, and

R^2 = CH₃ or CH₂CH₃;

S₁ B b) 0 to 30 percent by mass of the monomer of Formula I, wherein:

R^1 and R^2 have the meaning indicated for K A b);

S₁ B c) 0 to 10 percent by mass of a monomer copolymerizable with S₁ B a) and/or S₁ B b); and

S₁ B d) 0.1 to 9.9 percent by mass of monomers that contain nucleophilic groups; wherein said second shell S₂ B of polymer B comprises the following monomers in copolymerized form:

S₂ B a) 20 to 80 percent by mass of monomers of Formula I, wherein:

R^1 = H or CH₃, and

R^2 = CH₃ or CH₂CH₃;

S₂ B b) 20 to 70 percent by mass of the monomer of Formula I, wherein:

R^1 = H or CH₃, and R^2 has the same meanings as for K B b); and

S₂ B c) 0.1 to 9.9 percent by mass of monomers that are capable of a nucleophilic reaction with the epoxide-containing monomer of polymer A;

wherein said third shell S₃B comprises of the following monomers in copolymerized form:

S₃ B a) 30 to 90 percent by mass of monomers of Formula I, wherein:

$R^1 = H$ or CH_3 , and

$R^2 = CH_3$ or CH_2CH_3 ;

S_3 B b) 10 to 70 percent by mass of the monomer of Formula I, wherein:

$R^1 = H$ or CH_3 , and R^2 has the same meanings as for K B b);

S_3 B c) 0 to 10 percent by mass of a monomer copolymerizable with S_1 B a) and/or S_1 B b), the monomers having the meanings indicated for K A c); and
 S_3 B d) 0.1 to 9.9 percent by mass of monomers that contain nucleophilic groups.

2. (Canceled)

3. (Currently Amended) The plastisol formulation according to claim 1, wherein a mixing ratio of components A and B ranges between ~~100:0~~ 80:20 and 20:80 parts by weight.

4. (Original) The plastisol formulation according to claim 1, wherein a mixing ratios relative to the total mass of the component A have the following values:

- (K A) 20 to 90 percent by mass,
- (S_1 A) 10 to 80 percent by mass,
- (S_2 A) 0 to 70 percent by mass, and
- (S_3 A) 0 to 70 percent by mass.

5. (Original) The plastisol formulation according to claim 1, wherein a mixing ratio relative to the total mass of the component B has the following values:

- (K B) 20 to 100 percent by mass,
- (S_1 B) 0 to 80 percent by mass,
- (S_2 B) 0 to 70 percent by mass, and

(S₃B) 0 to 70 percent by mass.

6. (Original) The plastisol formulation according to claim 1, wherein said component A represents a gradient polymer, wherein the proportions by mass relative to the polymer A are as follows:

(K A) 0 to 90 percent by mass, and

(S A) 10 to 100 percent by mass.

7. (Original) The plastisol formulation according to claim 1, wherein said component B represents a gradient type, wherein the proportions by mass relative to the polymer B are as follows:

(K B) 0 to 90 percent by mass,

(S B) 10 to 100 percent by mass.

8. (Original) A method for coating of a metal sheet, comprising:

contacting a metal sheet with the plastisol according to claim 1.

9. (Original) A metal sheet coated with a plastisol formulation according to claim 1.

10. (Original) A vehicle, at least partly coated with a plastisol formulation according to claim 1.

11. (Original) A method for underbody protection of vehicles, comprising:

contacting a underbody of a vehicle with the plastisol formulation according to claim 1.

Application No.: 10/600,832

Reply to the Office Action dated: June 15, 2005

BASIS FOR THE AMENDMENT

Claim 2 has been canceled.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 1 and 3-11 will now be active in this application.

INTERVIEW SUMMARY

Applicants wish to thank Examiner Huang and Supervisory Examiner Teskin for the helpful and courteous discussion with Applicants' Representative on July 28, 2005. During this discussion it was noted that the limitations of Claims 2 will be include in Claim 1 and that the ratio in Claim 3 will be amended as done in the present amendment. Regarding Claims 6 and 7 it was noted that even though A or B may be "0" in the core (KA or KB respectively) there are still required to be present because they are in the shell (SA or SB, respectively). The Examiners appeared to agree.